International Energy Agency
Secure Sustainable Together

World Energy Outlook 2015

Laura Cozzi

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The start of a new energy era?

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- **2015 has seen lower prices for all fossil fuels**
  - *Oil & gas could face second year of falling upstream investment in 2016*
  - *Coal prices remain at rock-bottom as demand slows in China*
- **Signals turn green ahead of key Paris climate summit**
  - *Pledges of 150+ countries account for 90% of energy-related emissions*
  - *Renewables capacity additions at a record-high of 130 GW in 2014*
  - *Fossil-fuel subsidy reform, led by India & Indonesia, reduces the global subsidy bill below $500 billion in 2014*
- **Multiple signs of change, but are they moving the energy system in the right direction?**

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Demand growth in Asia – the sequel

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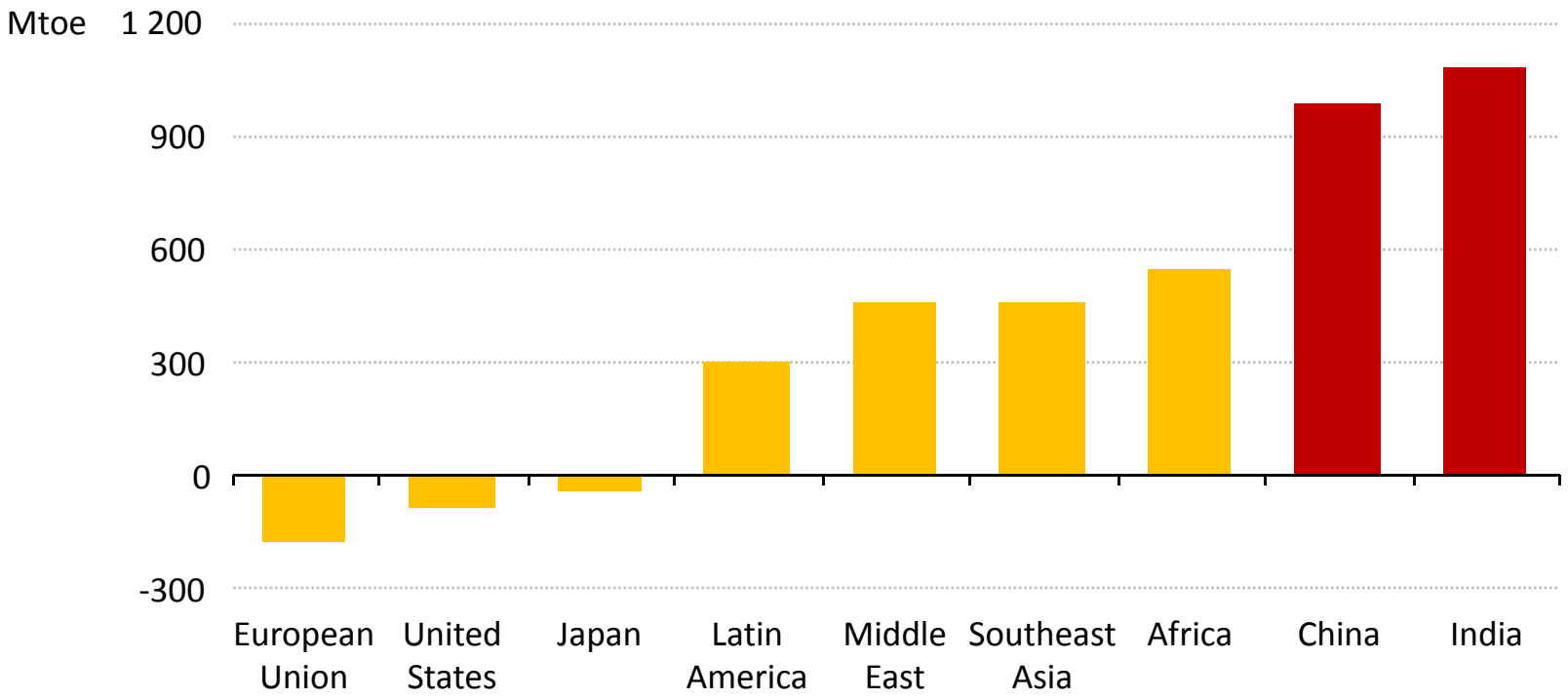
Change in energy demand in selected regions, 2014-2040



By 2040, India's energy demand closes in on that of the United States, even though demand per capita remains 40% below the world average

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Policies spur innovation and tip the balance towards low-carbon

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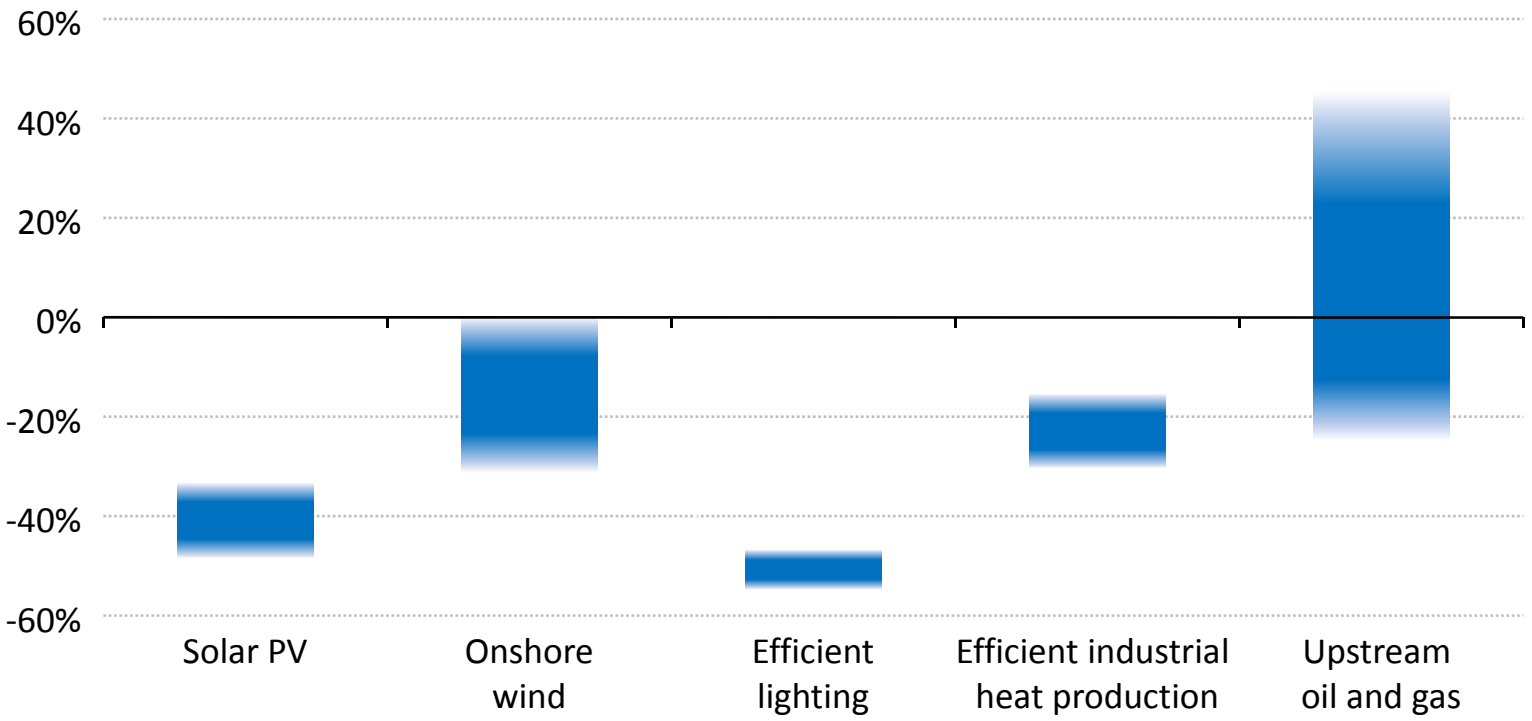
Costs in 2040 for different energy sources/technologies, relative to 2014



Innovation reduces the costs of low-carbon technologies & energy efficiency, but – for oil & gas – the gains are offset by the move to more complex fields

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A new balancing item in the oil market?

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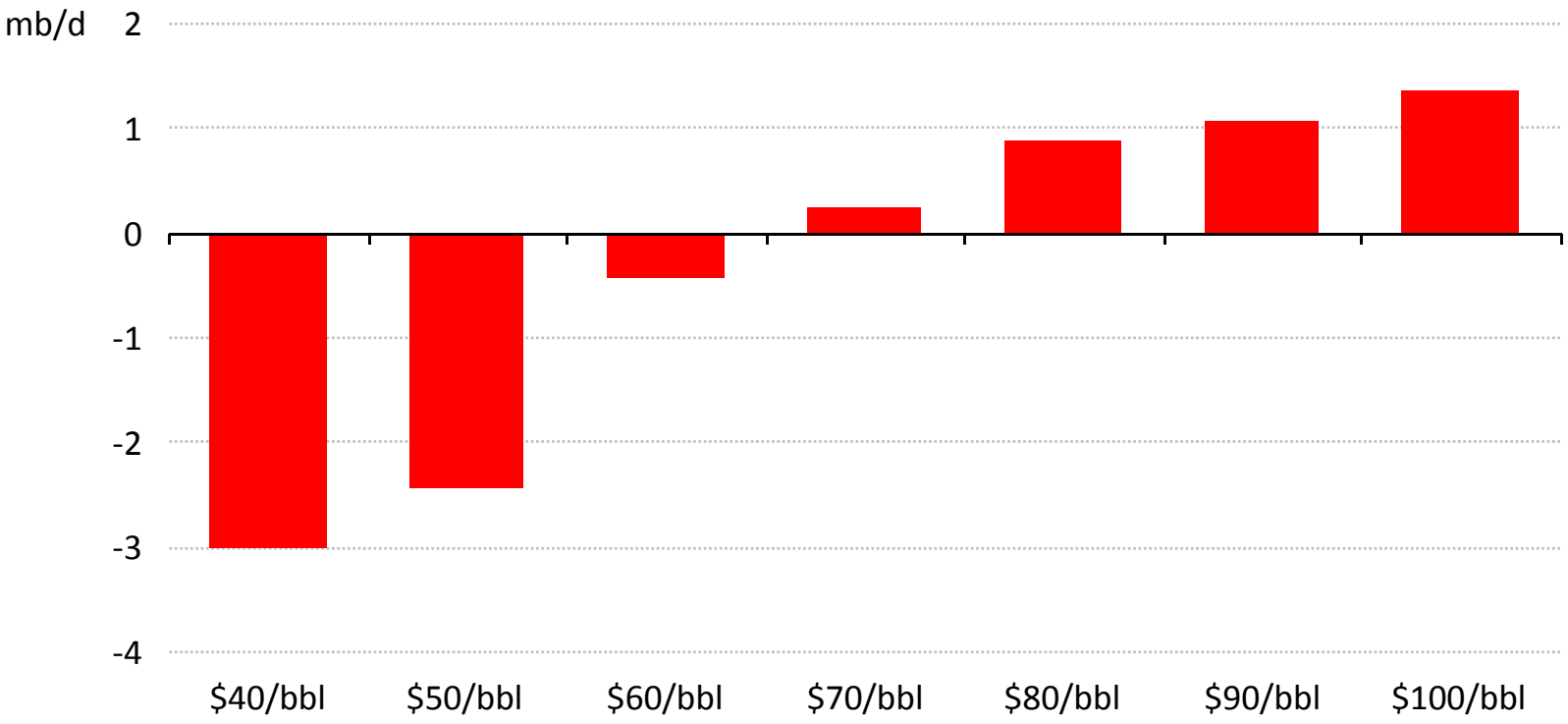
Change in production (2015-2020) of US tight oil for a range of 2020 oil prices



Tight oil has created more short-term supply flexibility, but there is no guarantee that the adjustment mechanism in oil markets will be smooth

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The big opportunities & uncertainties for natural gas are in Asia

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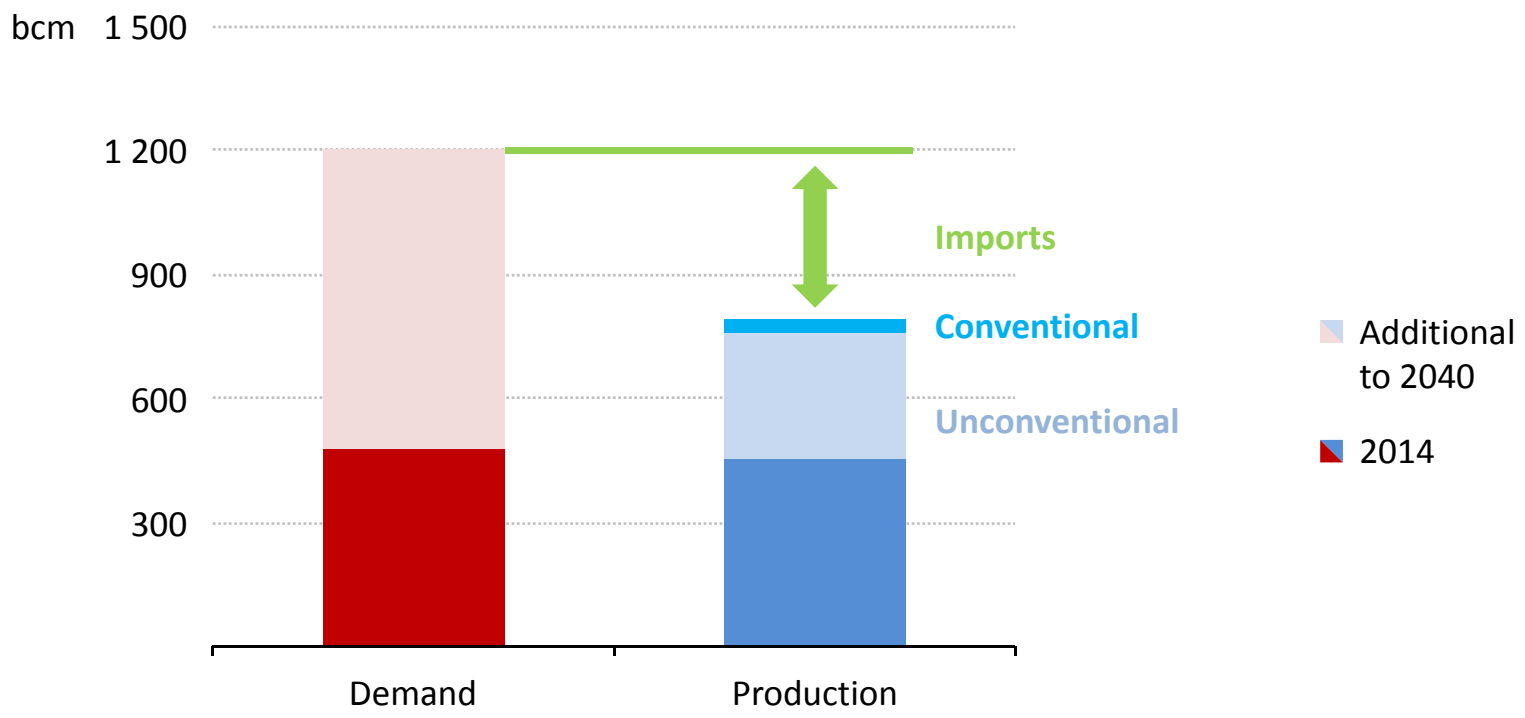
Natural gas demand and supply in developing Asia, 2040



Developing Asia accounts for almost half of the rise in global gas demand & 75% of the increase in imports, but gas faces strong competition from renewables & coal

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A new chapter in China's growth story

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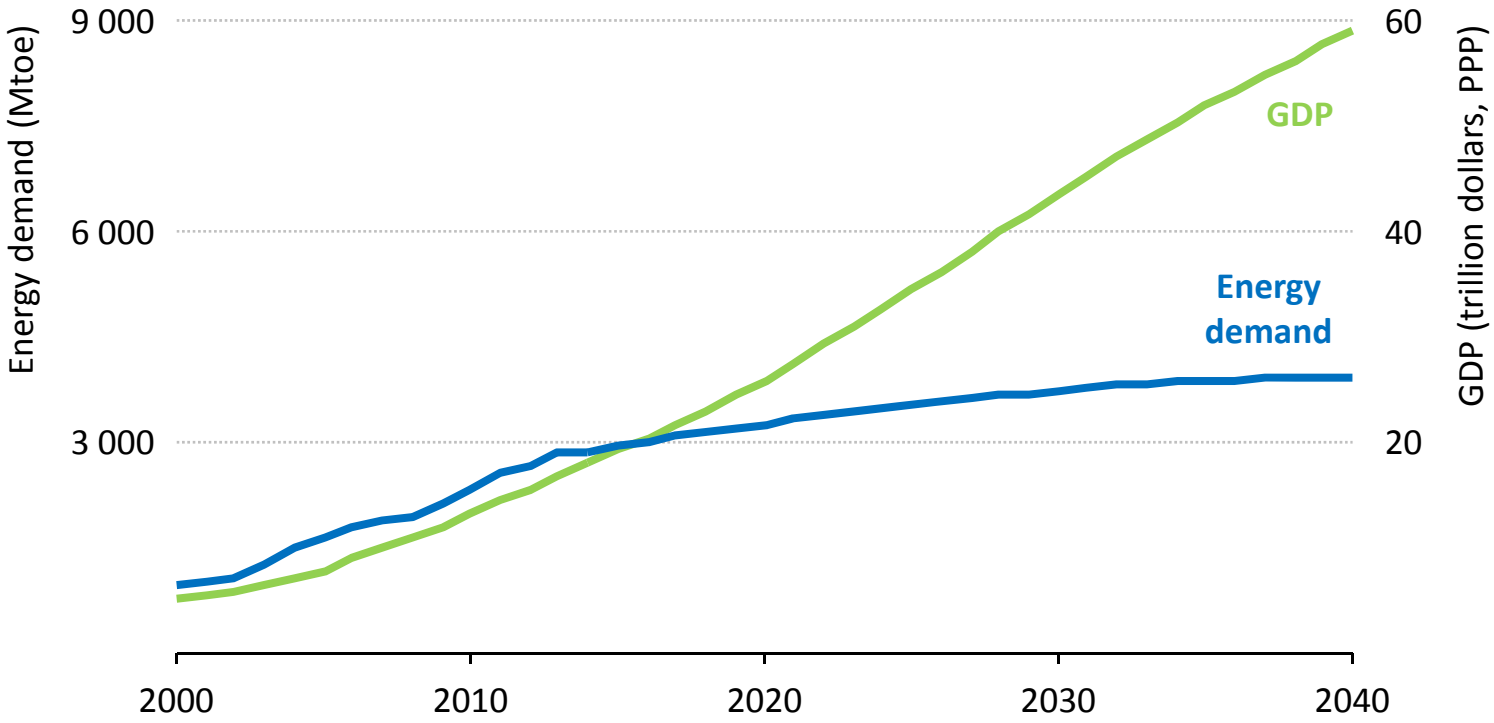
Energy demand in China



Along with energy efficiency, structural shifts in China's economy favouring expansion of services, mean less energy is required to generate economic growth

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India moving to the centre of the world energy stage

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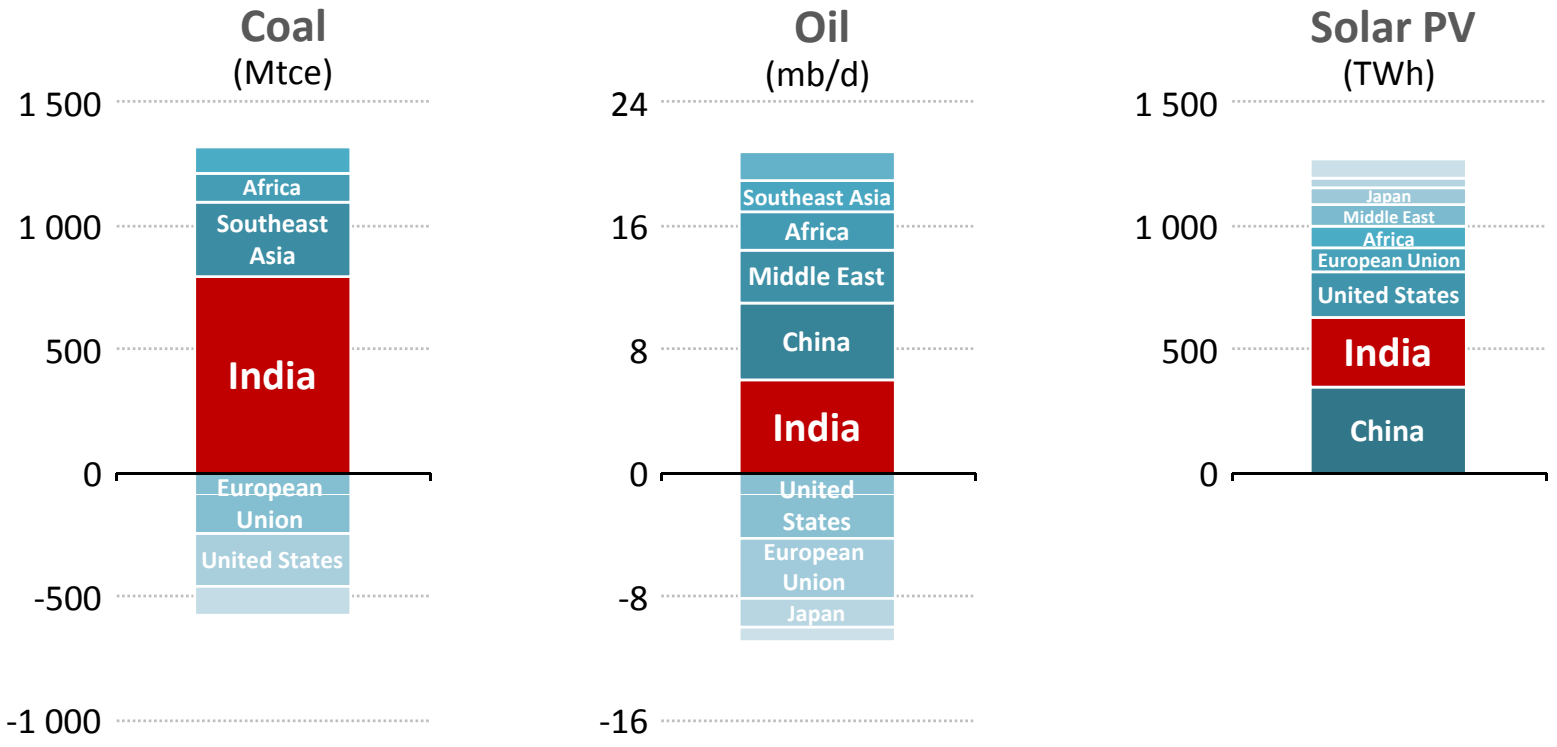
Change in demand for selected fuels, 2014-2040



New infrastructure, an expanding middle class & 600 million new electricity consumers mean a large rise in the energy required to fuel India's development

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Power is leading the transformation of the energy system

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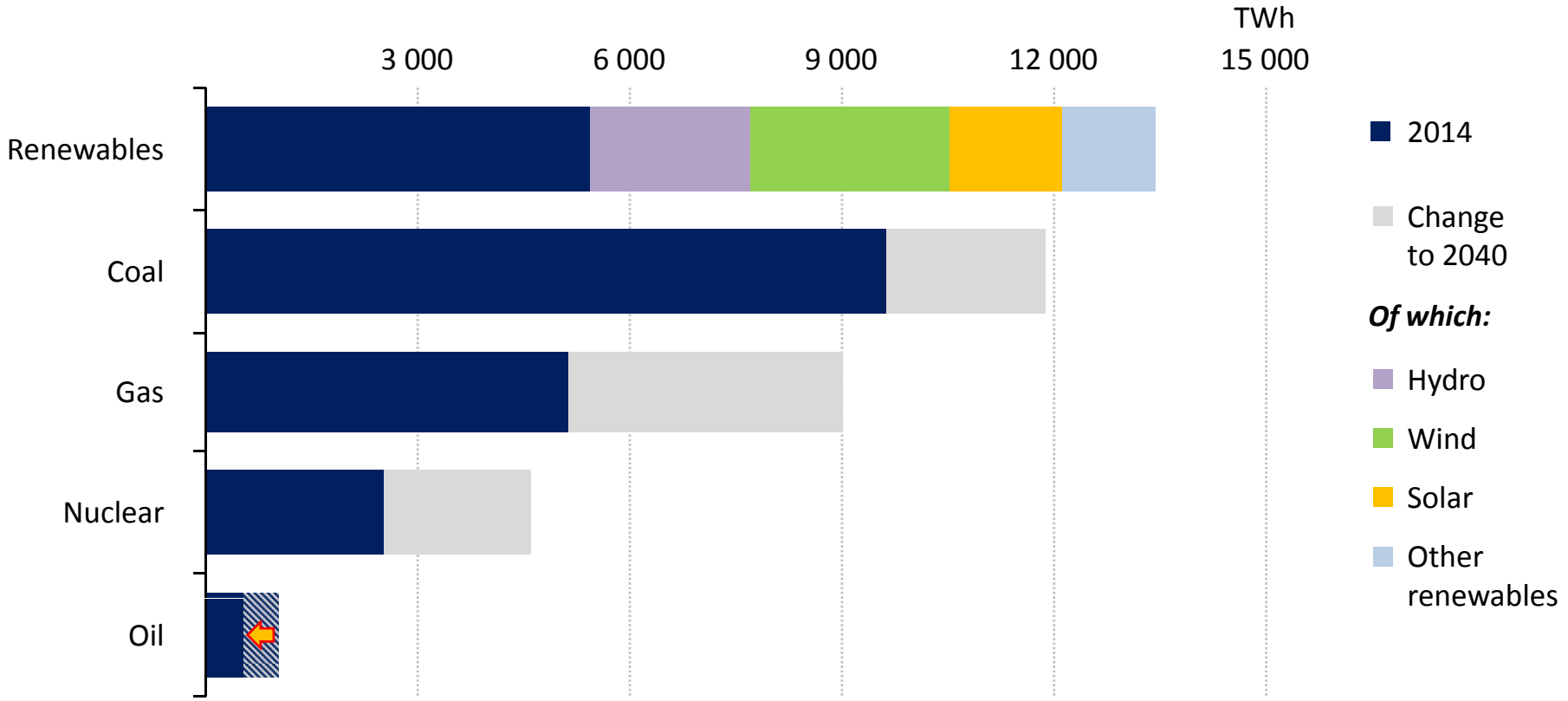
Global electricity generation by source



Driven by continued policy support, renewables account for half of additional global generation, overtaking coal around 2030 to become the largest power source

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Efficiency measures on the rise, but significant potential still exists

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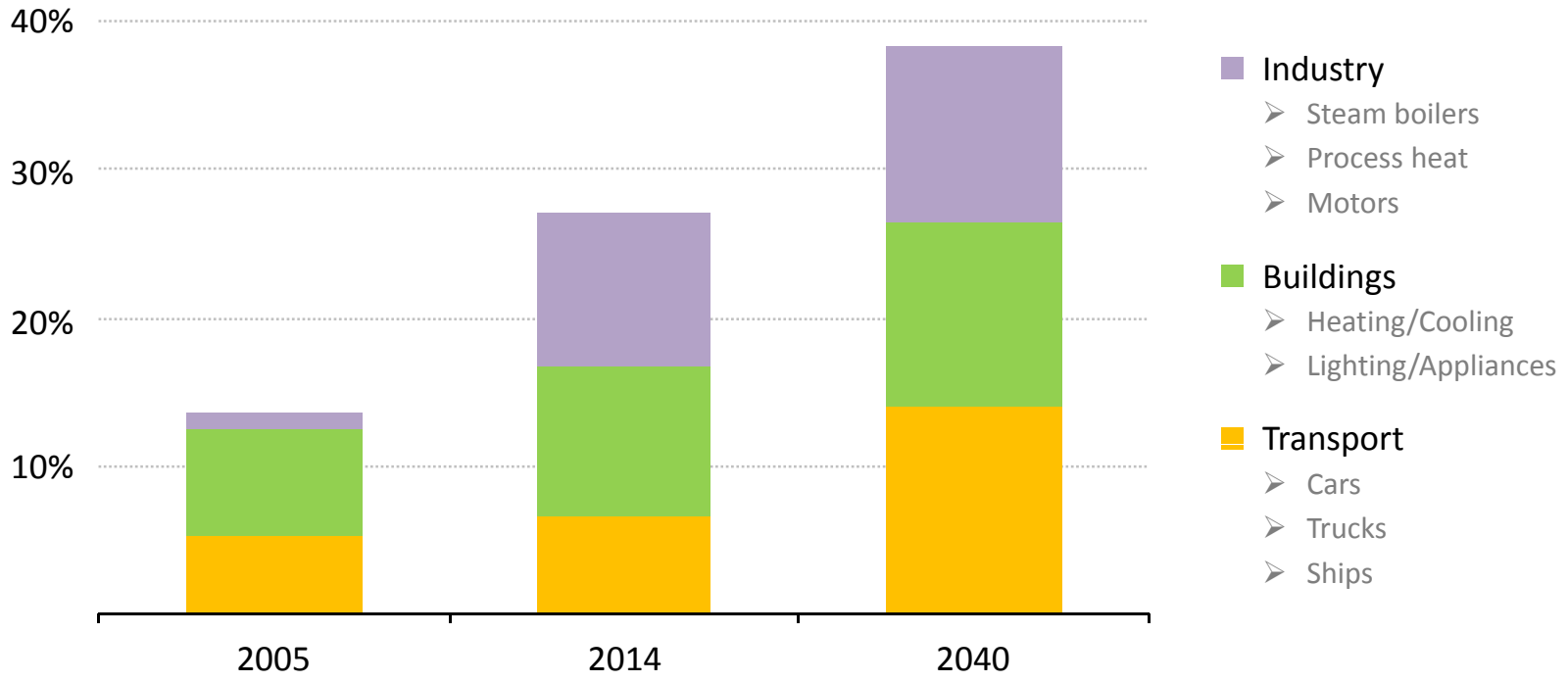
Share of global mandatory efficiency regulation of final energy consumption



Energy efficiency policies are introduced in more countries and sectors; they continue to slow demand growth but more can be done

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The coverage of climate pledges is impressive

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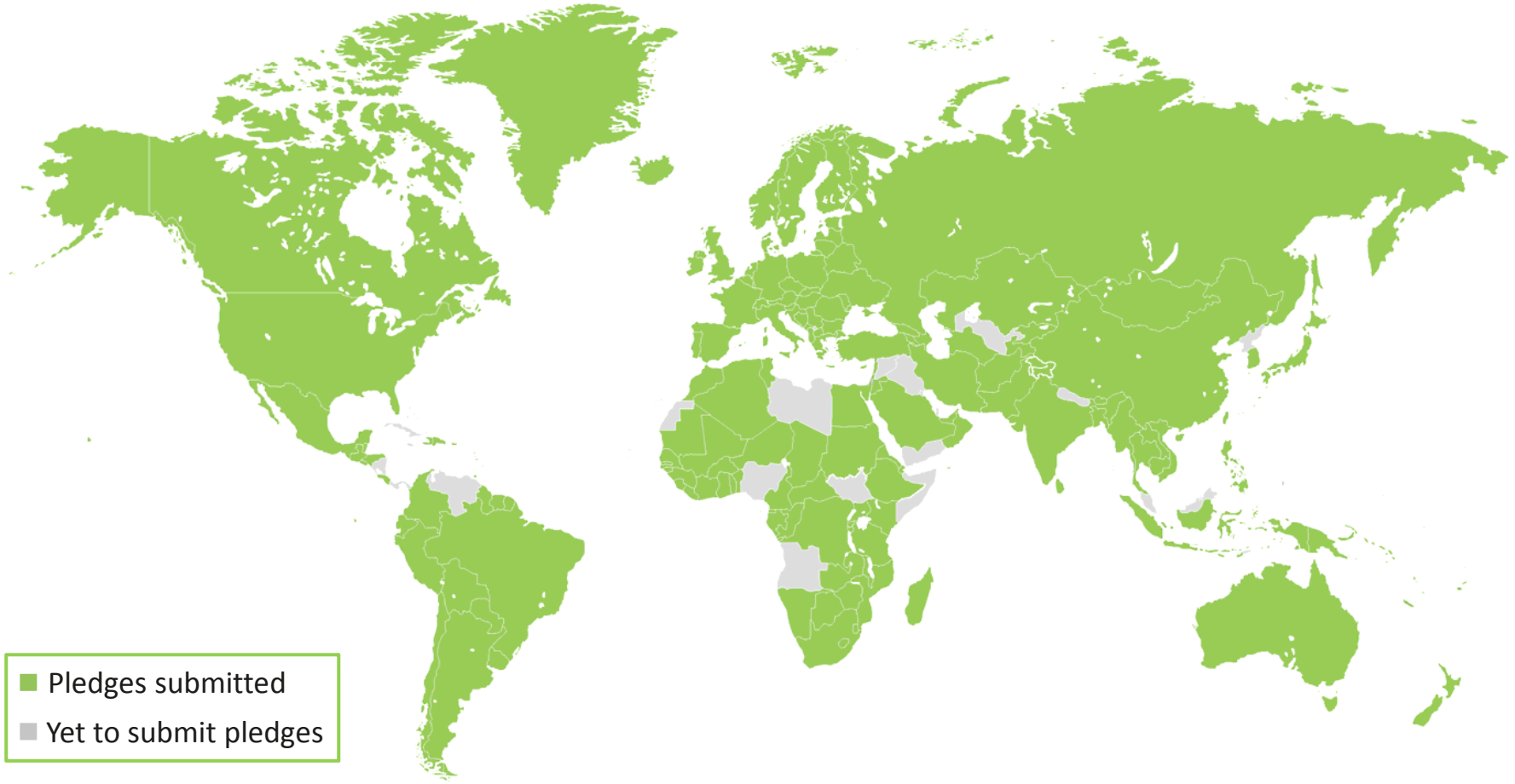

Climate pledges for COP21 are consistent with a temperature rise of 2.7 °C, with investment needs of $13.5 trillion in low-carbon technologies & efficiency to 2030

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Climate pledges decouple power sector emissions from electricity demand

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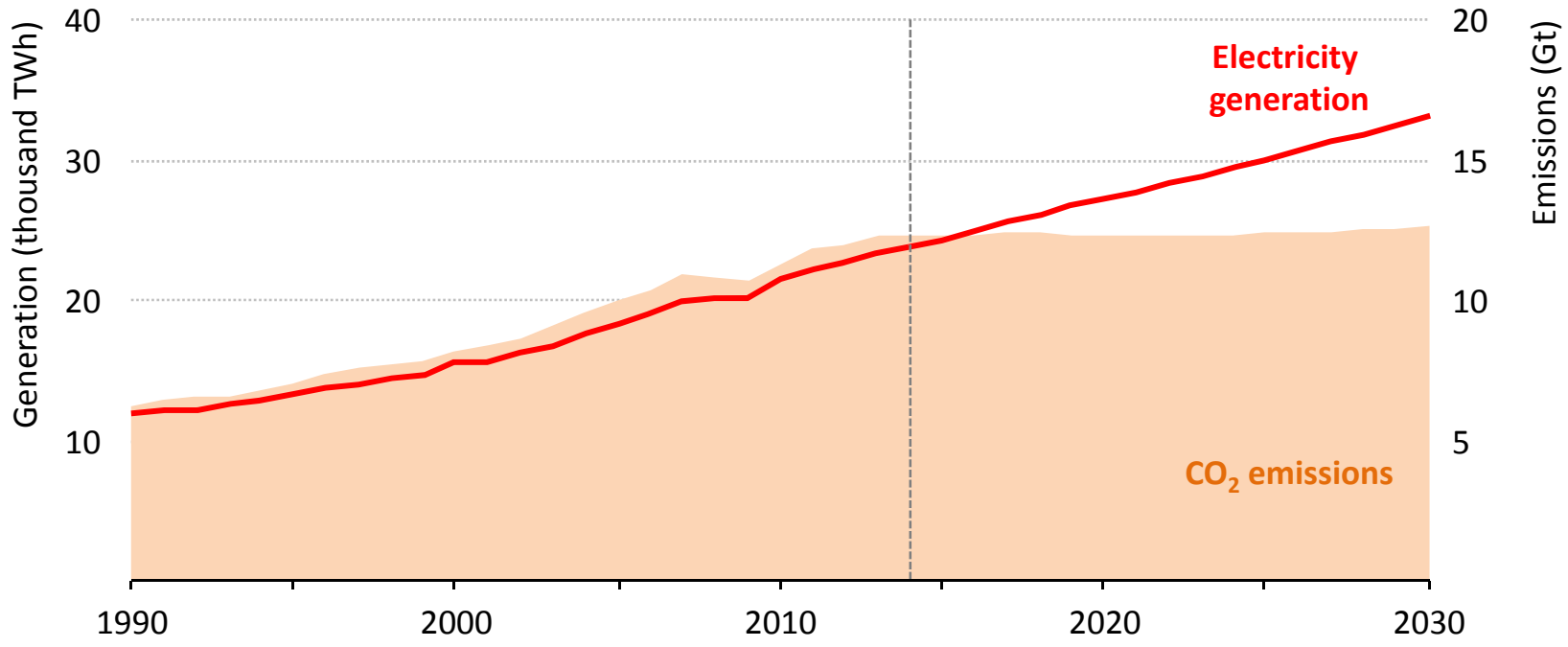
World electricity generation and related CO_2 emissions



The share of low-carbon power generation grows to almost 45% in 2030 so that power emissions remain flat, while electricity demand grows by more than 40%

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Conclusions

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- Low prices bring gains to consumers, but can also sow the seeds of future risks to energy security: no room for complacency
- India's energy needs are huge: there is a strong shared interest to support India's push for clean & efficient technologies
- China's transition to a more diversified & much less energy-intensive model for growth re-shapes energy markets
- The energy transition is underway, but needs a strong signal from Paris: governments must ring-fence policies against market swings
- With looming energy security & environmental challenges, international cooperation on energy has never been more vital

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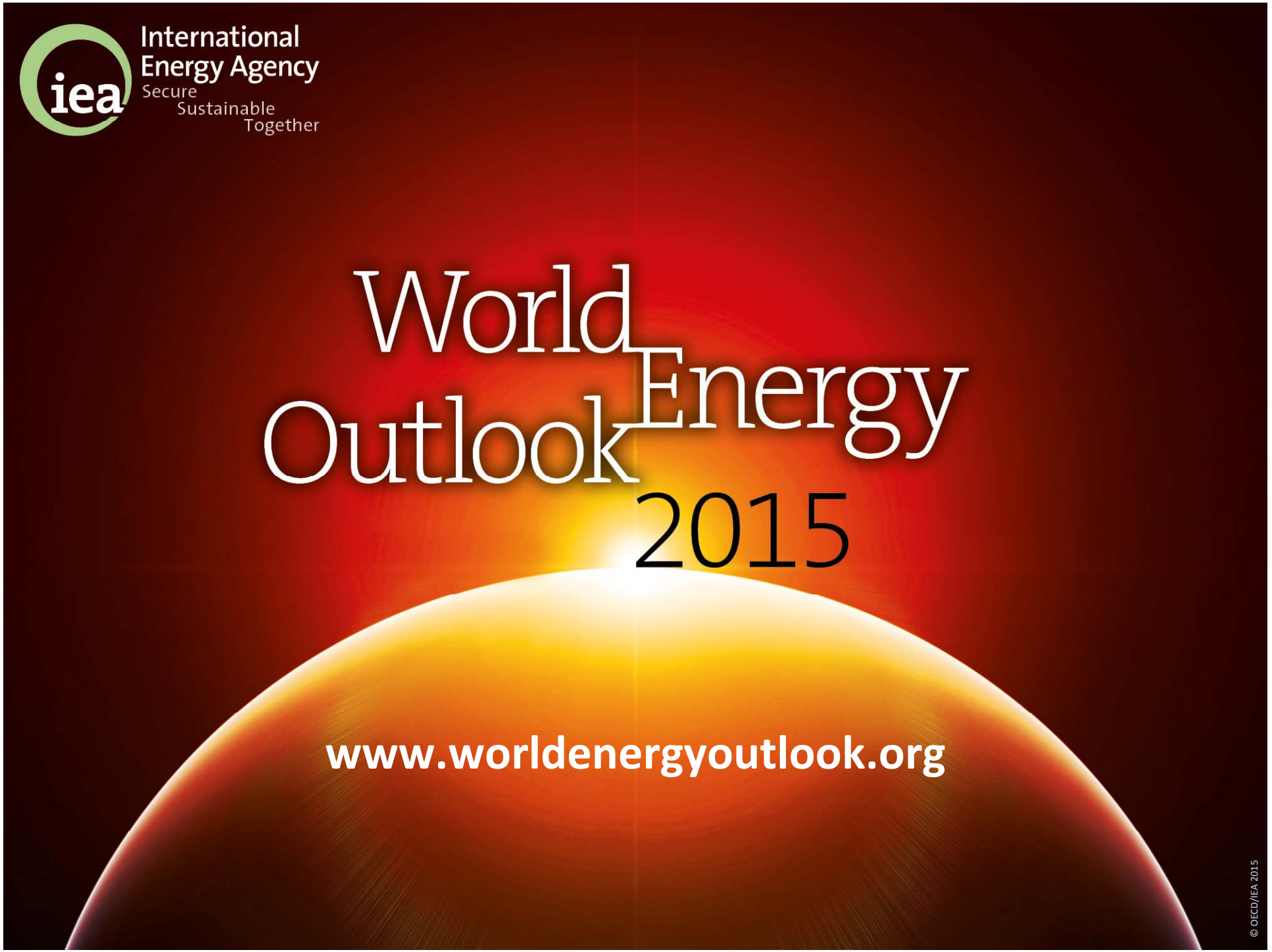
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